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ure of from 4^m to 8^m was deemed necessary. I gave exposures varying from $1^m\,30^s$ to 12^m, but even the shortest-timed negative shows that the plate was over-exposed. For the longer exposures the drift of the image in Declination caused easily visible distortions of the outline in Declination, as I had arranged no means of guiding for the twelve-inch.

Although the clock was regulated to the lunar rate of Right Ascension, thereby causing a drift of the star images, nevertheless more than one hundred star-trails can be counted within one degree of the Moon's outline.

The refraction effects of our atmosphere, and the unequal reflecting powers of lunar areas are strongly shown in some of the photographs of the crescent phase. Aside from the unequal distribution of the light during the total phase, the lunar surface features, illumined only by light passing through our atmosphere, appear much the same as those obtained of the full Moon.

The plates were placed in the principal focus; the diameter of the Moon's image being about 0.40 inches.

J. M. SCHAEBERLE.

LICK OBSERVATORY,
September 10, 1895.

TOTAL ECLIPSE OF THE MOON, SEPTEMBER 3, 1895.

This was a particularly bright eclipse, the disc of the Moon during totality being in general a bright red. There was a cinnamon-brown color in parts of the disc before contact with the shadow, due to emersion in the penumbra. The shadow itself appeared of tints ranging from steel-gray to olive-green, possibly the effect of contrast.

The rim of the Moon's disc could always be seen through the shadow, by the use of a strong pair of field-glasses; with which the following phases were observed:

Contact with shadow, $8^h\ 0^m\ 20^s$ P. S. T.

$$\text{Total eclipse,}\ \begin{cases} 9^h\ 6^m\ 50^s \\ 10^h\ 47^m\ 20^s \end{cases}$$

Contact with shadow, $11^h\ 55^m\ 6^s$

These phenomena appear to have been observed in general about half a minute later than the ephemeris times.

An occultation of a ninth magnitude star was observed with the four-inch finder of the thirty-six-inch telescope at the east edge of the Moon, at $9^h\ 57^m\ 58^s.3$ P. S. T. The star was BD. $-8°$, 5996 (8.7 mag.).

During the middle of totality the disc of the Moon was nearly covered by a dark patch of shadow, extending from the N. E. to the S. W. edges; leaving narrow crescents of much brighter illumination at the S. E. and N.W. edges. R. H. TUCKER.

THE TOTAL ECLIPSE OF THE MOON, 1895, SEPTEMBER 3.

The following observations were made with the 12-inch equatorial, using a power of about 85.

The aperture was reduced to eight inches until totality began, after which the full aperture was used. The finder was used principally in observing the transit of the shadow across the disc.

There was a layer of smoke and haze near the horizon, but it did not extend very high. The top of this layer was not above our altitude, so that the sky overhead was clear, and the air very transparent.

The centre of the Earth's shadow was a very deep, but clear, pure copper color. This color became several shades lighter towards the outer edge of the shadow, where it mixed with the yellow, becoming a strong orange, and slightly green at the edge.

This eclipse was a darker one than that of March this year, although the Moon remained plainly visible all through the total phase, the main features being discernible with the naked eye, and distinct in the telescope. The Milky Way showed quite conspicuously during totality.

$7^h\ 30^m$	P. S. T.	Seeing poor; Moon low; some obscuration on S. E. limb.
$7^h\ 50^m$		The eastern limb has grown darker.
$7^h\ 58^m\ 00^s$		First contact with shadow.
$8^h\ 00^m\ 00^s$		A notch on the E. limb to the naked eye. First contact with shadow certainly past.
$8^h\ 04^m\ 15^s$		Shadow touches W. wall of *Grimaldi.*
$8^h\ 06^m\ 25^s$		Shadow reaches *Aristarchus.*
$8^h\ 11^m\ 55^s$		Shadow reaches *Kepler.* No color visible in shadow.
$8^h\ 13^m\ 00^s$		Shadow reaches E. edge of *Sinus Iridum.*